

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-49. (Cancelled)

50. (New) A compound comprising a conjugate of;

(i) a polynucleotide or oligonucleotide molecule;

(ii) a carrier comprising at least one aldehyde group; and, optionally,

(iii) a suitable linker molecule conjugating said polynucleotide or oligonucleotide with said carrier.

51. (New) The compound of claim 50, wherein the polynucleotide or oligonucleotide molecule is an oligonucleotide molecule in the range of 5 to 50 bases in length.

52. (New) The compound of claim 50, wherein the polynucleotide or oligonucleotide molecule is a polynucleotide molecule in the range of 50 bases to 10 kilobases in length.

53. (New) The compound of claim 52, wherein the polynucleotide molecule is in the range of 1 to 6 kilobases in length.

54. (New) The compound of claim 50, wherein the said polynucleotide or oligonucleotide molecule comprises an expression cassette comprising a suitable promoter sequence operably linked to a nucleotide sequence encoding a protein(s) or peptide(s).

55. (New) The compound of claim 54, wherein said protein(s) or peptide(s) is an antigen or comprises one or more epitopes.

56. (New) The compound of claim 54, wherein said protein(s) or peptide(s) is a polytope peptide.

57. (New) The compound of claim 54, wherein said protein(s) or peptide(s) is an enzyme, receptor or hormone.

58. (New) The compound of claim 50 wherein the polynucleotide or oligonucleotide molecule is an antisense RNA, catalytic RNA or small interfering RNA (siRNA).

59. (New) The compound of claim 50 wherein the carrier comprises a plurality of aldehyde groups ranging in number from 20 to 750.

60. (New) The compound of claim 59, wherein the carrier comprises a plurality of aldehyde groups ranging in number from 100 to 500.

61. (New) The compound of claim 60, wherein the carrier comprises a plurality of aldehyde groups ranging in number from 200 to 400.

62. (New) The compound of claim 50 wherein the carrier is any ligand which is recognised by a cell-surface receptor and, following binding to the receptor, can be endocytosed.

63. (New) The compound of claim 62, wherein the carrier is a ligand selected from the group consisting of hormones, enzymes, cytokines and carbohydrate polymers.

64. (New) The compound of claim 63, wherein the carrier is a carbohydrate polymer.

65. (New) The compound of claim 64, wherein the carrier is an oxidised carbohydrate polymer.

66. (New) The compound of claim 65, wherein the carrier is oxidised mannan.

67. (New) The compound of claim 50 wherein the compound comprises a suitable linker molecule conjugating the polynucleotide or oligonucleotide molecule to the carrier.

68. (New) The compound of claim 67, wherein the linker molecule is a polycation linker.

69. (New) The compound of claim 68, wherein the linker molecule is selected from the group consisting of poly-L-lysine (PLL), polyethylimine (PEI), dendrimers and cationic lipids.

70. (New) A method for cell-specific delivery of a polynucleotide or oligonucleotide molecule to a target cell(s) of a subject, said method comprising:

administering the compound of claim 50 to said subject.

71. (New) A method for inducing an immune response to an antigen or epitope(s), wherein said immune response is primarily a CD8⁺ type of immune response, said method comprising:

providing a compound comprising a conjugate of;

(i) a polynucleotide or oligonucleotide molecule comprising a nucleotide sequence encoding an antigen or epitope(s);

(ii) a carrier comprising at least one aldehyde group; and, optionally,

(iii) a suitable linker molecule conjugating said polynucleotide or oligonucleotide with said carrier; and

administering said compound to said subject in an amount to induce a primarily CD8⁺ type of immune response to said antigen or epitope(s).

72. (New) The method of claim 71, wherein the carrier comprises a plurality of aldehyde groups ranging in number from 20 to 750.

73. (New) The method of claim 72, wherein the carrier comprises a plurality of aldehyde groups ranging in number from 100 to 500.

74. (New) The method of claim 73, wherein the carrier comprises a plurality of aldehyde groups ranging in number from 200 to 400.

75. (New) The method of claim 70 wherein the carrier is any ligand which is recognised by a cell-surface receptor and, following binding to the receptor, can be endocytosed.

76. (New) The method of claim 75, wherein the carrier is a ligand selected from the group consisting of hormones, enzymes, cytokines and carbohydrate polymers.

77. (New) The method of claim 76, wherein the carrier is a carbohydrate polymer.

78. (New) The method of claim 77, wherein the carrier is an oxidized carbohydrate polymer.

79. (New) The method of claim 78, wherein the carrier is oxidized mannan.

80. (New) A method for inducing an immune response to an antigen or epitope(s), wherein said immune response is primarily

a CD4⁺ type of immune response, said method comprising:

providing a compound comprising a conjugate of;

- (i) a polynucleotide or oligonucleotide molecule comprising a nucleotide sequence encoding an antigen or epitope(s);
- (ii) a carrier comprising reduced mannan; and, optionally,
- (iii) a suitable linker molecule conjugating said polynucleotide or oligonucleotide with said carrier; and

administering said compound to said subject in an amount to induce a primarily CD4⁺ type of immune response.

81. (New) The method of claim 70 wherein the polynucleotide or oligonucleotide molecule is an oligonucleotide molecule in the range of 5 to 50 bases in length.

82. (New) The method of claim 70 wherein the polynucleotide or oligonucleotide molecule is a polynucleotide molecule in the range of 50 bases to 10 kilobases in length.

83. (New) The method of claim 82, wherein the polynucleotide molecule is in the range of 1 to 6 kilobases in length.

84. (New) The method of claim 70 wherein the said polynucleotide or oligonucleotide molecule comprises an expression cassette comprising a suitable promoter sequence operably linked to a nucleotide sequence encoding a protein(s) or peptide(s).

85. (New) The method of claim 84, wherein said protein(s) or peptide(s) is an antigen or comprises one or more epitopes.

86. (New) The method of claim 84, wherein said protein(s) or peptide(s) is a polypeptide.

87. (New) A compound comprising a conjugate of;
(i) a polynucleotide or oligonucleotide molecule;
(ii) a carrier comprising reduced mannan; and, optionally,
(iii) a suitable linker molecule conjugating said polynucleotide or oligonucleotide with said carrier.

88. (New) The compound of claim 87, wherein the polynucleotide or oligonucleotide molecule is an oligonucleotide molecule in the range of 5 to 50 bases in length.

89. (New) The compound of claim 87, wherein the polynucleotide or oligonucleotide molecule is a polynucleotide molecule in the range of 50 bases to 10 kilobases in length.

90. (New) The compound of claim 89, wherein the polynucleotide molecule is in the range of 1 to 6 kilobases in length.

91. (New) The compound of claim 87 wherein the said polynucleotide or oligonucleotide molecule comprises an expression cassette comprising a suitable promoter sequence operably linked to a nucleotide sequence encoding a protein(s) or peptide(s).

92. (New) The compound of claim 91, wherein said protein(s) or peptide(s) is an antigen or comprises one or more epitopes.

93. (New) The compound of claim 91, wherein said protein(s) or peptide(s) is a polytope peptide.

94. (New) The compound of claim 91, wherein said protein(s) or peptide(s) is an enzyme, receptor or hormone.

95. (New) The compound of claim 87 wherein the polynucleotide or oligonucleotide molecule is an antisense RNA, catalytic RNA or small interfering RNA (siRNA).

96. (New) The compound of claim 87 wherein the compound comprises a suitable linker molecule conjugating the polynucleotide or oligonucleotide molecule to the carrier.

97. (New) The compound of claim 96, wherein the linker molecule is a polycation linker.

98. (New) The compound of claim 97, wherein the linker molecule is selected from the group consisting of poly-L-lysine (PLL), polyethylimine (PEI), dendrimers and cationic lipids.